

WHAT IS CLAIMED IS:

1. A method of manufacture of a styrene-butadiene latex comprising the steps of:

5 manufacture of a core latex of styrene-butadiene polymers;

multiple coating of shell polymers onto the outer side of said core latex; and

adjustment of the gel content and molecular weight of  
10 the outermost layer of the latex by adding a chain transfer agent singly after said step of manufacture of said shell polymers.

2. The method of manufacture of a styrene-butadiene  
15 latex according to Claim 1, wherein said latex is manufactured through emulsion polymerization of a core composition comprised of styrene, 1,3-butadiene, an ethylenic unsaturated acid monomer, a cyanovinyl monomer, a monomer that may be copolymerized with said monomers, and a  
20 chain transfer agent.

3. The method of manufacture of a styrene-butadiene latex according to Claim 2, wherein said core composition is comprised of 35 to 90 parts by weight of styrene, 10 to  
25 55 parts by weight of 1,3-butadiene, 1 to 18 parts by

weight of an ethylenic unsaturated acid monomer, 0.5 to 15 parts by weight of a cyanovinyl monomer, 1 to 25 parts by weight of a monomer that may be copolymerized with said monomers, and 0.1 to 1.0 parts by weight of a chain transfer agent.

4. The method of manufacture of a styrene-butadiene latex according to Claim 1, wherein said shell polymers are manufactured through emulsion polymerization of a shell composition comprised of styrene, 1,3-butadiene, an ethylenic unsaturated acid monomer, a cyanovinyl monomer, a monomer that may be copolymerized with said monomers, and a chain transfer agent.

5. The method of manufacture of a styrene-butadiene latex according to Claim 4, wherein said shell composition is comprised of 30 to 80 parts by weight of styrene, 10 to 70 parts by weight of 1,3-butadiene, 0.5 to 18 parts by weight of an ethylenic unsaturated acid monomer, 1.0 to 20 parts by weight of a cyanovinyl monomer, 1.0 to 20 parts by weight of a monomer that may be copolymerized with said monomers, and 0.1 to 5.0 parts by weight of a chain transfer agent.

6. The method of manufacture of a styrene-butadiene

latex according to Claim 1, wherein said chain transfer agent is mercaptan having 7 to 16 carbon atoms.

7. The method of manufacture of a styrene-butadiene  
5 latex according to Claim 1, wherein the amount of use of said chain transfer agent is 0.05 to 5.0 parts by weight.

8. The method of manufacture of a styrene-butadiene latex according to Claim 2 or 4, wherein said ethylenic  
10 unsaturated acid monomer is:

one or more kinds of unsaturated carboxylic acids selected from a group of methacrylic acid, acrylic acid, itaconic acid, crotonic acid, fumaric acid, and maleic acid; or

15 one or more kinds of unsaturated polycarboxylic acid alkyl esters having one or more carboxyl radicals selected from a group of itaconic acid monoethyl ester, fumaric acid monobutyl ester, and maleic acid monobutyl ester.

20 9. The method of manufacture of a styrene-butadiene latex of Claim 2 or 4, wherein said cyanovinyl monomer is acrylonitrile or methacrylonitrile.

10. The method of manufacture of a styrene-butadiene  
25 latex according to Claim 2 or 4, wherein said monomer that

may be copolymerized is one or more kinds of compounds selected from a group of:

unsaturated carboxylic acid alkyl esters which may be methyl acrylate, methyl methacrylate, ethyl acrylate, ethyl  
5 methacrylate, butyl acrylate, or butyl methacrylate;

unsaturated carboxylic acid hydroxyalkyl esters which may be  $\beta$ -hydroxyethyl acrylate,  $\beta$ -hydroxypropyl acrylate, or  $\beta$ -hydroxyethyl methacrylate;

unsaturated carboxylic acid amides which may be  
10 acrylamide, methacrylamide, itaconamide, or maleic acid monoamide, or their derivatives; and

aromatic vinyl monomers which may be  $\alpha$ -methylstyrene, vinyl toluene, or *p*-methylstyrene.

15 11. The method of manufacture of a styrene-butadiene latex according to Claim 1, wherein the gel content of said styrene-butadiene latex manufactured finally is 30 to 90%.

20 12. The method of manufacture of a styrene-butadiene latex according to Claim 1, wherein the glass transition temperature of said core latex is -10 to 50°C, and the glass transition temperature of said shell polymers is -20 to 40°C.

25 13. The method of manufacture of a styrene-butadiene

latex according to Claim 1, wherein the average particle diameter of said core latex is 40 to 90 nm, and the average particle diameter of said styrene-butadiene latex manufactured finally is 130 to 260 nm.

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14. A styrene-butadiene latex manufactured according to any of Claims 1 through 13.

15. A paper coating solution including a styrene-butadiene latex manufactured according to any of Claims 1 through 13.

16. Coated paper coated with a paper coating solution including a styrene-butadiene latex manufactured according to any of Claims 1 through 13.

17. A styrene-butadiene latex characterized by having a structure in which multiple layers of styrene-butadiene polymers are coated onto the outer side of the core latex of said styrene-butadiene polymers as shell polymers.